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Job No.: CTCE/BBMP/W.No.08/KRIDL/AGG/2013-14 : 25.03.2014

TEST REPORT ON COARSE AGGREGATES
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, Bangalore.

Name of Work : Improvements to roads and drains at Amco Layout in Ward No.08, BBMP, Bangalore.

Reference : AEE/KH/438/2013-14 Dated: 24.03.2014

Date of Testing : 25.03.2014

Material : 40mm Aggregates

Total Wt. of Aggregates in gms **10000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits
80	0	0	0	100	100
40	135	1.35	1.35	98.65	95-100
20	6050	60.50	61.85	38.15	30-70
10	2050	20.50	82.35	17.65	10-35
4.75	1525	15.25	97.60	2.40	0-5

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Job No.: CTCE/BBMP/W.No.08/KRIDL/CUBE/2013-14

24.04.2014

TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager,** KRIDL, Bangalore.
Name of the work	: Improvements to roads and drains at Amco Layout in Ward No.08, BBMP, Bangalore.
Reference	: AEE/KH/438/2013-14 Dated: 24.03.2014
Sample ID	: Cement Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{15}
Compressive Strength as on	: 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	27.03.2014	24.04.2014	8.192	356.6	15.85
2	27.03.2014	24.04.2014	8.269	368.3	16.37
3	27.03.2014	24.04.2014	8.335	379.3	16.86

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Job No.: CTCE/BBMP/W.No.08/KRIDL/WMM/Gradation/2013-14

03.04.2014

GRADATION FOR WMM

MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, Bangalore.

Name of Work : Improvements to roads and drains at Amco Layout in Ward No.08, BBMP, Bangalore.

Reference : AEE/KH/438/2013-14 Dated: 24.03.2014

Date of Testing : 03.04.2014

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **8100**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	265	265	3.3	96.7	95-100
22.4	2405	2670	33.0	67.0	60-80
11.2	1520	4190	51.7	48.3	40-60
4.75	1095	5285	65.2	34.8	25-40
2.36	990	6275	77.5	22.5	15-30
0.600	900	7175	88.6	11.4	8-22
0.075	600	7775	96.0	4.0	0-8

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Job No.: CTCE/BBMP/W.No.08/KRIDL/WMM/S-T/2013-14 03.04.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of Work	Improvements to roads and drains at Amco Layout in Ward No.08, BBMP, Bangalore.
Reference	AEE/KH/438/2013-14 Dated: 24.03.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	03.04.2014

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Result : Flakiness Index = **11.89%**

Elongation Index = **13.50%**

Result : Combined Flakiness & Elongation index **25.39%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.08/KRIDL/WMM/AIV/2013-14 03.04.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to roads and drains at Amco Layout in Ward No.08, BBMP, Bangalore.
Reference	AEE/KH/438/2013-14 Dated: 24.03.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	03.04.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	391	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	88	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	302	
4	Aggregate Impact value = percent fines	22.62	22.76	
	100* (W_2/W_1)%			22.69

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Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.08/KRIDL/SDBC/AIV/2014-15 24.04.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to roads and drains at Amco Layout in Ward No.08, BBMP, Bangalore.
Reference	AEE/KH/438/2013-14 Dated: 24.03.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	24.04.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	386	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	83	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	304	304	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	21.24	21.45	**21.35**

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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Basav... ...gar,
Bangalore-560 079.

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.
Tele Fax : 23223227, Website : www.civiltechconsultants.com
E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/W.No.08/KRIDL/SDBC/Shape_T/2013-14 : 24.04.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager,** KRIDL, Bangalore.
Name of Work	: Improvements to roads and drains at Amco Layout in Ward No.08, BBMP, Bangalore.
Reference	: AEE/KH/438/2013-14 Dated: 24.03.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Semi Dense Bituminous Concrete
Date of Testing	: 24.04.2014

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Result : Flakiness Index = **12.35%**

Elongation Index = **13.98%**

Result : Combined Flakiness & Elongation index **26.33%**

Comments:

Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No.08/KRIDL/SDBC/Stripping/2013-14 25.04.2014

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the work	Improvements to roads and drains at Amco Layout in Ward No.08, BBMP, Bangalore.
Reference	AEE/KH/438/2013-14 Dated: 24.03.2014
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	25.04.2014

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.4	3.50	96.50
2	3.5		
3	3.6		

Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/W.No.08/KRIDL/SDBC/Sp_Wa/2014-15 25.04.2014

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to roads and drains at Amco Layout in Ward No.08, BBMP, Bangalore.
Reference	AEE/KH/438/2013-14 Dated: 24.03.2014
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	25.04.2014

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2020	2021	2022	
2	Weight of basket suspended in water	W_2 g	755	2020	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1265	1266	1267	
4	Weight of saturated surface dry aggregate in air	W_3 g	2018	2020	2025	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	753	754	758	
6	Weight of oven dried aggregate	W_4 g	1998	2006	2016	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.653	2.660	2.660	2.658
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.726	2.711	2.692	2.709
9	Water Absorption	$((W_3-W_4)*100)/W_4$	1.00%	0.70%	0.45%	0.72%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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Aggregate Gradation Test

IS : 2386 Part I

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to roads and drains at Amco Layout in Ward No.08, BBMP, Bangalore.
Reference	AEE/KH/438/2013-14 Dated: 24.03.2014
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	25.04.2014

Total Weight of Sample: **5300** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	345	6.5	6.51	93.49	90-100	
4.75	2490	47.0	53.49	46.51	35-51	
2.36	620	11.7	65.19	34.81	24-39	
1.18	490	9.2	74.43	25.57	15-30	
0.3	490	9.2	83.68	16.32	9-19	
0.075	485	9.2	92.83	7.17	3-8	

Total Weight of Sample: **5350** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	365	6.8	6.82	93.18	90-100	
4.75	2985	55.8	62.62	37.38	35-51	
2.36	625	11.7	74.30	25.70	24-39	
1.18	365	6.8	81.12	18.88	15-30	
0.3	315	5.9	87.01	12.99	9-19	
0.075	350	6.5	93.55	6.45	3-8	

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